



# EXCERPT FROM THE PROCEEDINGS

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**MANAGING THE SERVICES SUPPLY CHAIN IN THE DEPARTMENT  
OF DEFENSE: AN EMPIRICAL STUDY OF CURRENT MANAGEMENT  
PRACTICES**

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**by**

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The following article is taken as an excerpt from the proceedings of the annual Acquisition Research Program. This annual event showcases the research projects funded through the Acquisition Research Program at the Graduate School of Business and Public Policy at the Naval Postgraduate School. Featuring keynote speakers, plenary panels, multiple panel sessions, a student research poster show and social events, the Annual Acquisition Research Symposium offers a candid environment where high-ranking Department of Defense (DoD) officials, industry officials, accomplished faculty and military students are encouraged to collaborate on finding applicable solutions to the challenges facing acquisition policies and processes within the DoD today. By jointly and publicly questioning the norms of industry and academia, the resulting research benefits from myriad perspectives and collaborations which can identify better solutions and practices in acquisition, contract, financial, logistics and program management.

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# Managing the Services Supply Chain in the Department of Defense: An Empirical Study of Current Management Practices

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Areas of Dr. Apte's research interests include managing service operations, supply chain management, technology management, and globalization of information-intensive services. He has published over 30 articles, five of which have won awards from professional societies. His research articles have been published in prestigious journals including *Management Science*, *Interfaces*, *Production and Operations Management*, *Journal of Operations Management*, *Decision Sciences*, *IIE Transactions*, *Interfaces*, and *MIS Quarterly*. He has co-authored two books, *Manufacturing Automation* and, *Managing in the Information Economy*.

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## 1. Introduction

Services acquisition in the US Department of Defense (DoD) has continued to increase in scope and dollars in the past decade. In fact, even considering the high value of weapon systems and large military items purchased in recent years, the DoD has spent more on services than on supplies, equipment and goods (Camm, Blickstein & Venzor, 2004). The acquired services presently cover a very broad set of service activities—including professional, administrative, and management support; construction, repair, and maintenance of facilities and equipment; information technology; research and development, and medical care.

As the DoD's services acquisition continues to increase in scope and dollars, the agency must give greater attention to proper acquisition planning, adequate requirements definition, sufficient price evaluation, and proper contractor oversight (GAO, 2002). Recently, the Director, Defense Procurement and Acquisition Policy (DPAP) has identified inappropriate use of



services contracts in the DoD (Director, DPAP, 2007, March 2) and is taking action to improve contracting for services throughout the Department (Director, DPAP, 2006, August 16). In many ways, the issues affecting services acquisition are similar to those affecting the acquisition of physical supplies and weapon systems. However, the unique characteristics of services and the increasing importance of services acquisition offer a unique and significant opportunity for conducting research in the management of the service supply chain in the Department of Defense.

We have addressed the need for research in the area of services acquisition by undertaking a series of research projects. Thus far, we have completed two research projects; the current research is our third research project in this area.

The first research project was exploratory in nature, wherein we tried to understand the major challenges and opportunities in the service supply chain in the DoD (Apte, Ferrer, Lewis, & Rendon, 2006). As a part of this research study, we conducted in-depth case studies on acquisition of services in three different organizations: Presidio of Monterey, Travis AFB and the Naval Support Detachment Monterey (NSDM). The major conclusions of that research are:

1. The Department of Defense's services acquisition has continued to increase in scope and dollars in the past decade. The GAO found that since FY 1999, the DoD's spending on services has increased by 66%; indeed, in FY 2003, the DoD spent over \$118 billion—or approximately 57% of the DoD's total procurement dollars—on services (GAO, 2005, March). The DoD procures a variety of services, including both the traditional commercial services and services unique to defense. In terms of amount spent, the following four service categories together represent over 50% of total spending on services: (a) professional, administrative, and management support services, (b) construction, repair and maintenance of structure and facilities, (c) equipment maintenance, and (d) information technology services.
2. Presidio of Monterey (POM) has contracted maintenance of about 155 buildings and structures to Presidio Municipal Services Agency (PMSA), a consortium of the cities of Monterey and Seaside. The PMSA agreement has allowed the two cities to apply their expertise to routine municipal services and the Army to focus on its military mission. Through this partnership and contract with PMSA, the POM has realized a 41% reduction in expenses when compared with previous base operation costs and private contracts. We recommend that the DoD explore and evaluate the possibility of establishing such synergistic contractual relations with cities adjacent to other bases in support of their respective operations.
3. Proactive and frequent communications are essential for a successful services contract. We found a successful example of this at Travis AFB, where 60th CONS uses Business Requirement Advisory Groups (BRAGs) as the mechanism for conducting such communications. BRAGs are cross-functional teams made up of personnel representing the functional organizations involved as customers in the services contracts. These cross-functional teams plan and manage the service contracts throughout the service's lifecycle. As the DoD increases the use of centralized contracting organizations and regional contracts, the use of proactive and frequent communications will be even more essential for the successful management and performance of these contracts.





4. Our visits and interviews at Travis AFB, Presidio of Monterey (POM), Naval Air Station Whidbey Island (NAS WI), and the Naval Support Detachment Monterey (NSDM) confirmed the GAO's finding that: While the Army's and Navy's creation of centralized installation management agencies can potentially create efficiencies and improve the management of the facilities through streamlining and consolidation, implementation of these plans has so far met with mixed results in quality and level of support provided to activities and installations (GAO, 2005, June).
5. The centralization of contracting offices and the use of regional contracts will result in additional dynamics for the DoD's acquisition of services. The Department's use of centralized contracting organizations and regional contracts will require even more proactive and frequent communications between the contracting organization and the customer. Although it is still too early to assess the effectiveness and efficiency of centralized contracting organizations and regional contracts, this research has indicated that centralization and regionalization of services contracts are growing trends in the DoD and will significantly change how services contracts are managed.
6. Given the unique characteristics of services (such as intangibility, co-production, diversity and complexity), establishing service specifications, and measuring and monitoring the quality of delivered service are inherently more complex than with manufactured goods. Hence, it is critical to have onboard a "knowledgeable client" and the necessary number of skilled contracting personnel to define the requirements and to supervise vendors and assure quality of outsourced services. The DoD has been aggressively complying with OMB's *Circular A-76*, which directs all federal government agencies "to rely on the private sector for needed commercial services" (OMB, 2003). This has resulted in dramatic growth in DoD spending on services, with a simultaneous downsizing of the DoD civilian and military acquisition workforce. We believe that the downsizing trend is not in sync with the critical need to have a necessary number of skilled contracting personnel onboard. This could mean that in the DoD's outsourced services, either the needs are not being fully satisfied, or the value for the money spent is not being realized.
7. As the DoD acquires more services than goods, the acquisition of services and the use of service contractors are becoming increasingly critical aspects of the DoD mission. However, the management infrastructure for the acquisition of services is less developed than for the acquisition of products and systems. For example, there is a less-formal program-management approach and lifecycle methodology for the acquisition of services, which is confirmed by the lack of standardization in the business practices associated with the services acquisition process. This results from the fact that the functional personnel currently managing the services programs are not considered members of the DoD acquisition workforce and are typically not provided acquisition training under *Defense Acquisition Workforce Improvement Act (DAWIA)* requirements.

Review of the current literature also shows that the use of a well-defined, disciplined approach and infrastructure for the management of projects is critical for a project's success in meeting cost, schedule, and performance objectives (Kerzner, 2006). In the absence of a well-defined management infrastructure, project teams are left to create an ad-hoc approach to managing the project. Based on our exploratory research, we believe that this is the current situation in many DoD services acquisition programs. Both the lack of a well-defined program management infrastructure and the lack of a lifecycle approach to services acquisition project



management are putting the success of these critical services at risk. The risks of not meeting the service acquisition's cost, schedule, and performance objectives are, consequently, higher in critical DoD service projects. As the DoD increases its acquisition of services—particularly in light of anticipated budget cuts and dwindling resources—the Department must ensure that its service acquisition projects are effectively and efficiently managed.

The lack of a developed program management infrastructure for the acquisition of services was a critical research finding that warranted further study. Thus, our second research project was geared towards studying the program management infrastructure in service supply chain in the DoD. In this research, too, we conducted two additional in-depth case studies and developed a conceptual model of a service lifecycle that can be used to analyze and design the DoD's services acquisition process. In our project report (Apte & Rendon, 2007), we discuss the program-management approach, identify basic project-management concepts, describe how these concepts are being used in the acquisition of defense weapon systems, and recommend how they can be adapted in the acquisition of services in the DoD.

The program-management approach essentially consists of a well-defined, disciplined methodology and infrastructure. The program-management approach also includes a centralized, coordinated management of project activities. This includes the use of a project lifecycle, integrated processes, designated managers with project authority, integrated cross-functional teams, and an enabling organizational structure.

Our research on managing the service supply chain within the DoD, and specifically in the Air Force, has identified the following findings:

The traditional approach to managing services acquisition does not include a disciplined methodology and infrastructure. Nor does it include a centralized, coordinated management of project activities involving the use of the project lifecycle, a designated project manager, integrated cross-functional teams, and an enabling organizational structure.

However, our research did identify two innovative approaches to managing services acquisition programs. The Air Education and Training Command (AETC) approach incorporates a well-defined, disciplined methodology and infrastructure. Through the use of both the Program Management Flight and AETC Contracting Squadron, the AETC is able to provide centralized, coordinated, pre-award management of services acquisition programs. And although in the post-award management, the AETC approach does not maintain an on-site program manager, it does maintain an on-site administrative contracting officer. Thus, regardless of its success, this situation has the potential to result in disparate and broken communications between all parties involved in managing the services acquisition program.

On the other hand, the Air Combat Command (ACC) model for services acquisition management using the Acquisition Management and Integration Center (AMIC) approach includes a well-defined, disciplined methodology and infrastructure, as well as a centralized, coordinated program-management approach. The AMIC approach is unique in that it provides a cradle-to-grave acquisition approach to services acquisition management. This integrated approach results in management efficiencies to include an effective process orientation, maximum resource availability and maximum training effectiveness.



## 2. Current Research Focus

The objective of this current research is to develop a more comprehensive understanding of how services acquisition is managed at a wide range of military bases throughout the Department of Defense. This current research is focused on answering the following research questions:

1. What types of services are typically procured at military installations, and what dollar amount is annually spent on these services?
2. What type of acquisition strategy, procurement method, and contracts are used in services acquisition?
3. How is the service acquisition process managed? What management concepts—such as a lifecycle, a program-management or a project-management approach—are used?
4. What type of organization/management structure is used to manage the services acquisition?
5. What training is given to contract and project/program management staff?
6. Are there any significant differences between the way services are acquired and managed in different DoD departments?

### Development and Review of Survey Instrument

The methodology for this current research involves the application of a survey instrument recently developed for this specific purpose. The MBA student team of Compton and Meinshausen, under the guidance of Apte, Apte, and Rendon, developed the survey instrument as part of their MBA research project (Compton & Meinshausen, 2007). The developed survey was pilot tested for validity and will be then used to collect additional empirical data regarding the current state of services acquisition management at the installation level across the military departments.

The services acquisition research survey consists of questions focusing on specific demographic data for each military department, major command, region, and military installation. The survey also asks specific questions related to the approach, method, and procedures used in the acquisition of services for specific categories of services. The specific categories of services included in this research are listed in Figure 1. These service categories are considered to be the most common services acquired by the various DoD departments. The 7 service categories included in this research accounted for more than \$83 billion spent on services in FY 2005 and accounted for roughly 87% of expenditures on services.



Service Category	Product/Service Classification (PSC) Code
Professional, administrative, and management support	R
Maintenance and repair of equipment	J
Data processing and telecommunications	D
Medical	Q
Utilities and housekeeping	S
Transportation and travel	V
Maintenance and repair of real property	Z

**Figure 1. Service Categories**

The survey instrument includes core questions related to the methods and procedures used in the acquisition of services for these seven categories of services. These core questions focus on the following areas (Compton & Meinshausen, 2007):

Contract Characteristics. The purpose of this category of questions is to gain insight into the dominant procurement method and contract type used in the acquisition of services at the installation. The characteristics examined in this section are degree of competition (competitively bid or sole-source), contract type (fixed-price or cost-type), and type of contract incentive (incentive-fee or award-fee or award-term).

Acquisition Management Methods. The purpose of this category of questions is to gain insight into the types of management methods and approaches used for the acquisition of these services at each phase of the contract-management process. For each of the contract-management phases, the survey asks whether the phase was conducted at a regional, installation, or some other organizational level. This core question category also focused on whether a project-team approach was typically used in the acquisition of the respective service category at the installation level.

Project-team Approach. The purpose of this category of questions is to explore the installations that identified a project-team approach in the services acquisition management method described above. The questions explore the position of the services acquisition project team leader, such as a Program/Project Manager or Contracting Officer. This category of questions also explored information on the owner, generator, and approving authority of the requirement (the specific service being acquired). This category of questions provides additional insight into how a project-management approach is being used in the acquisition of services.

Service Acquisition Leadership. The purpose of this category of questions is to explore services acquisitions in which a project-management approach was not dominantly used. The questions explore the position of the person leading the services acquisition. This category of questions also explored information on the owner, generator, and approving authority of the requirement (the specific service being acquired).

The last category of core questions is focused on the use of a lifecycle approach, length of assignments for services acquisition management personnel staff, use of market research techniques, level of staffing in services acquisition management, and level of training of services



acquisition management personnel. These questions use a Likert scale to measure the responses.

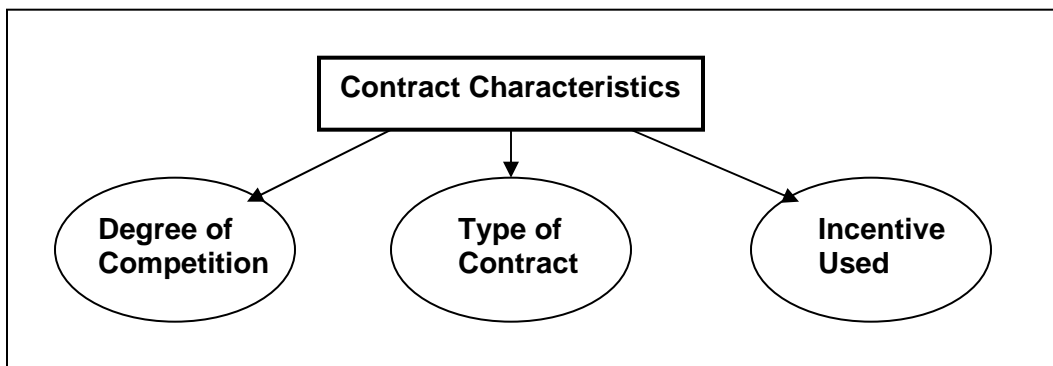
Finally, the last category of survey questions solicits feedback and any general comments regarding the topic of services acquisition. This survey instrument will also allow the researchers to collect data that will be subsequently analyzed to answer the research questions. This research will then require more sophisticated statistical analysis—as discussed in the next section of this paper.

### 3. Preliminary Hypothesis

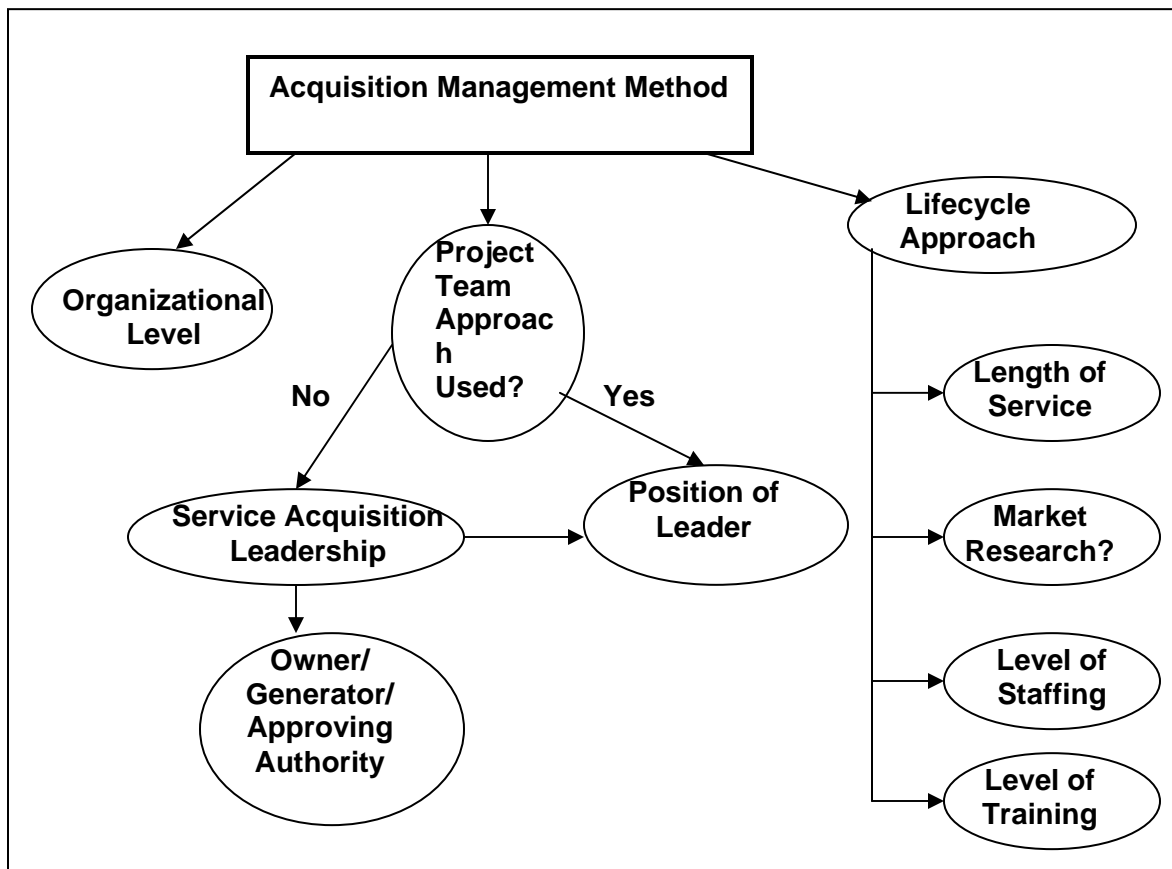
The objective of this study, understanding acquisition of services at diverse military bases, is dependent on the survey responses. By designing the survey in a specific way, we have been able to guide the present and past direction of the study of the responses. We analyzed the preliminary results and recorded the findings. However, we plan to further quantitatively analyze the responses, based on the survey currently in progress, in order to provide rigor to and validation of our conclusions.

#### Planned Quantitative Techniques/Analysis

We plan to analyze the responses statistically to find the proportions of various characteristics and management approaches in principal nodes (depicted in rectangles in Figure 2 and Figure 3) across the seven categories described (Figure 1) in the previous section. In this analysis, an understanding of the causes of predominantly or seldom-used approaches will lead to better insight into the acquisition management methods of services. Figure 2 and Figure 3 describe our investigation of the data across the seven categories.



**Figure 2. Dominant Procurement Methods**



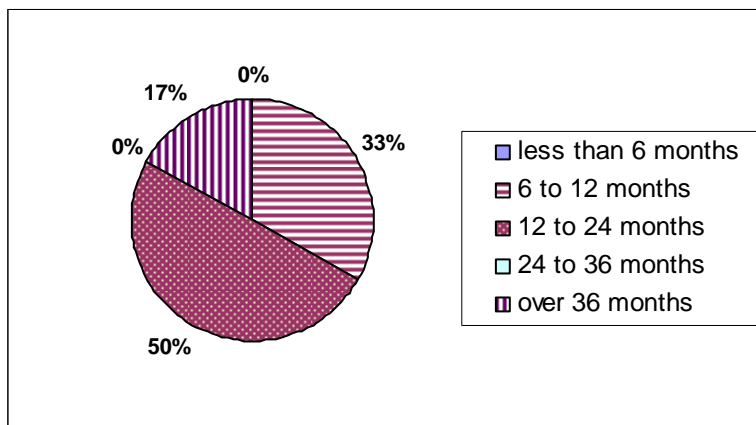
**Figure 3. Management Approaches**

Creation of an appropriate survey to guide the data collection and answer the research questions was a challenging task. Therefore, the responses from the preliminary feedback were time-constrained and, hence, minimal (Compton & Meinshausen, 2007). Currently, two student teams guided by Apte, Apte, and Rendon (one in the Air Force and the other in the Navy) are working with the existing survey engine. We believe these studies will result in sufficient data and will lead to substantial statistical analysis offering insight into the management of service acquisition.

The analysis will explore relations, if they exist, between the secondary nodes (depicted in circles in Figure 2 and Figure 3). We will be interested in finding the correlation between various independent and dependent variables that will represent these secondary nodes and other possible issues discovered. The analysis will also explore whether and how the dollar amount spent has any effect on the contract characteristics or different management approaches, the principal nodes. Based on the level of responses received, we plan to simulate the data if necessary. If the data turns out to be inconclusive in any of these aspects, then that in itself will be an important finding. It may suggest there is no efficient process in place for the acquisition of services—which may, in turn, lead to a recommendation for better management.

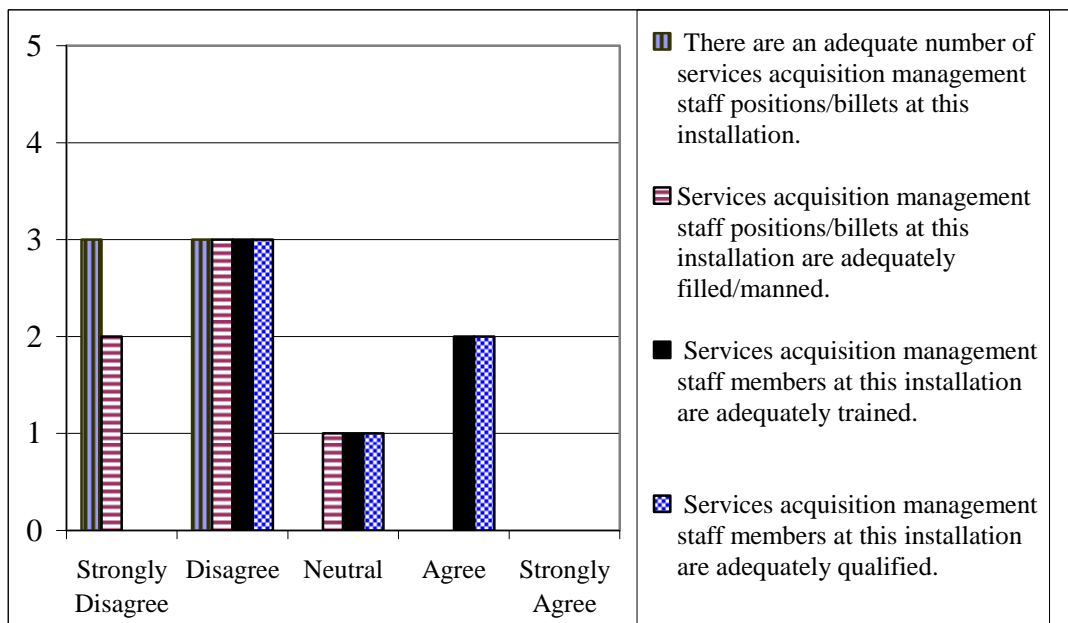
## Preliminary Findings

We now offer some of our findings based on the existing preliminary data. Data collected for the secondary nodes dealing with the length of service of Contracting Officer Representatives and Quality-assurance Evaluators shows that 83% of personnel serve in their billets 2 or less years. This is illustrated in Figure 4. We believe the 33% who serve a year or less imply a high turnover rate. This can negatively impact the quality of contractor surveillance.



**Figure 4. Length of Service**

Data collected for the level of staffing and training (for which results are shown in Figure 5) confirm GAO reports regarding the understaffed, under-trained and under-qualified services acquisition workforce (GAO, 2001). These findings clearly indicate that the acquisition process will not improve until the situation changes.



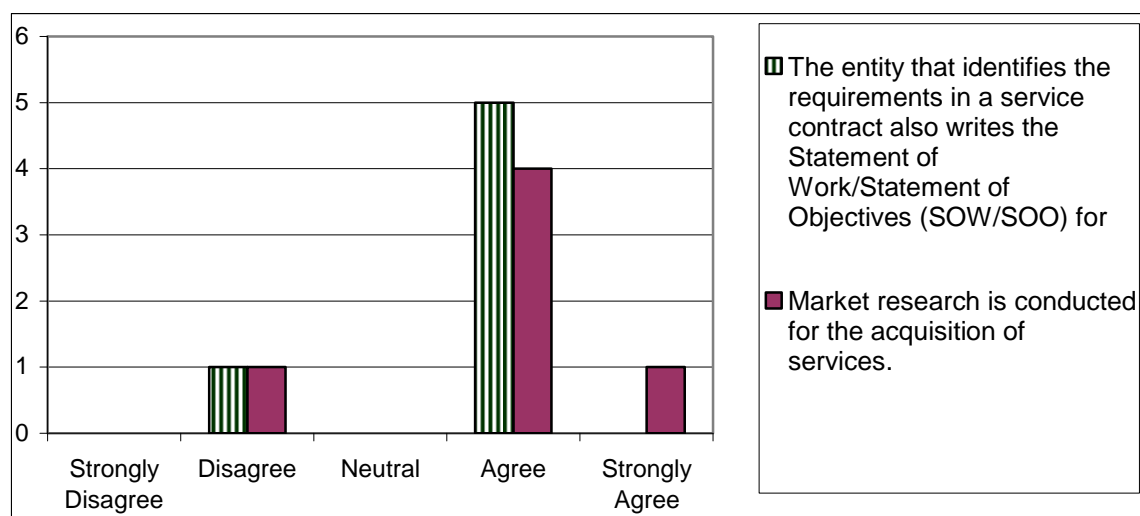
**Figure 5. Levels of Staffing, Training, and Qualification**



As per the secondary node of lifecycle approach, the data collected shows that 50% of the respondents disagreed that a lifecycle approach is used at their respective installation for both routine and non-routine services. Based on this response, Compton and Meinshausen (2007) reached the conclusion that “the lack of a lifecycle approach for routine and non-routine services has the potential to place the government at a higher level of risk due to improper planning for the various phases in a service’s lifecycle” (p. 32).

Finally, Figure 6 shows that respondents primarily agree there is no inconsistency between requirements identification and Statements of Work/Objectives.

Therefore, we infer that the cost increase is not due to miscommunication of requirements and objectives. Data also shows that respondents agreed that market research was conducted for the acquisition of services.



**Figure 6. Positive Responses**

Thus, based on the data collected so far, our preliminary observations suggest that the current state of services acquisition management at the installation level suffers from several deficiencies; these then result in increasing service contracts. Some of the key aspects are deficit billet and manning levels (which are further aggravated by insufficient training and the inexperience of acquisition personnel), and the lack of strong project-team and lifecycle approaches. Each of these contributes to ineffective and inefficient management.

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- Managing Services Supply Chain
- Acquiring Combat Capability via Public-Private Partnerships (PPPs)
- Knowledge Value Added (KVA) + Real Options (RO) Applied to Shipyard Planning Processes
- Portfolio Optimization via KVA + RO
- MOSA Contracting Implications
- Strategy for Defense Acquisition Research
- Spiral Development
- BCA: Contractor vs. Organic Growth

### **Contract Management**

- USAF IT Commodity Council
- Contractors in 21st Century Combat Zone
- Joint Contingency Contracting
- Navy Contract Writing Guide
- Commodity Sourcing Strategies
- Past Performance in Source Selection
- USMC Contingency Contracting
- Transforming DoD Contract Closeout
- Model for Optimizing Contingency Contracting Planning and Execution

### **Financial Management**

- PPPs and Government Financing
- Energy Saving Contracts/DoD Mobile Assets
- Capital Budgeting for DoD
- Financing DoD Budget via PPPs
- ROI of Information Warfare Systems
- Acquisitions via leasing: MPS case
- Special Termination Liability in MDAPs



## **Human Resources**

- Learning Management Systems
- Tuition Assistance
- Retention
- Indefinite Reenlistment
- Individual Augmentation

## **Logistics Management**

- R-TOC Aegis Microwave Power Tubes
- Privatization-NOSL/NAWCI
- Army LOG MOD
- PBL (4)
- Contractors Supporting Military Operations
- RFID (4)
- Strategic Sourcing
- ASDS Product Support Analysis
- Analysis of LAV Depot Maintenance
- Diffusion/Variability on Vendor Performance Evaluation
- Optimizing CIWS Lifecycle Support (LCS)

## **Program Management**

- Building Collaborative Capacity
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to Aegis and SSDS
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Terminating Your Own Program
- Collaborative IT Tools Leveraging Competence

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Acquisition Research Program:  
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**Managing the Service Supply Chain  
in the Department of Defense:  
An Empirical Study of Current Management Practices**

Aruna Apte, Uday Apte and Rene Rendon

Naval Postgraduate School  
May 2008

# Overview

- Background
- Previous Research Findings
- Current Research Focus
- Preliminary Findings

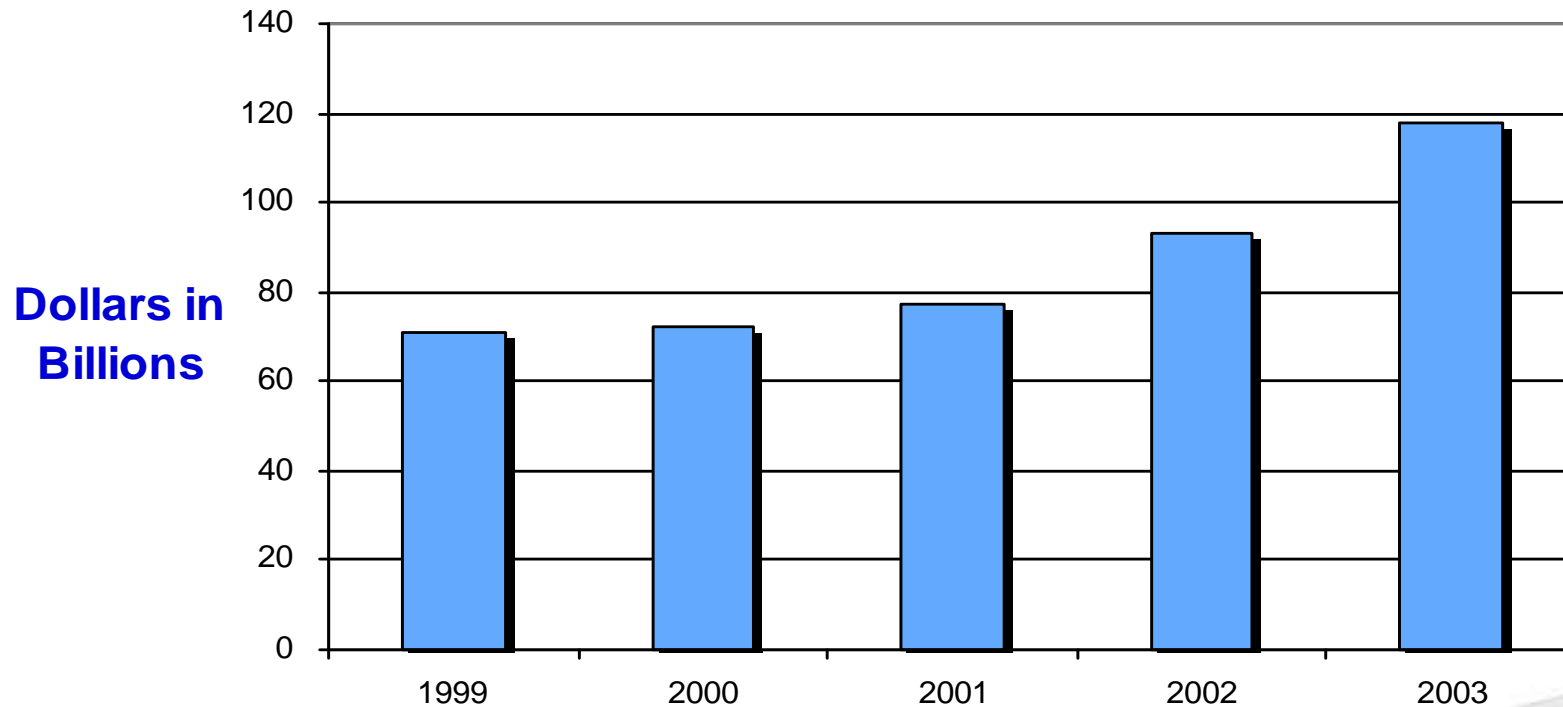


# Managing the Service Supply Chain in the Department of Defense: Ongoing Research Program

- FY 2006      Exploratory Research in the  
                 Opportunities and Challenges
- FY 2007      Implications for a Program  
                 Management Approach
- FY 2008      An Empirical Study of Current  
                 Management Practices



# The Services Acquisition Environment

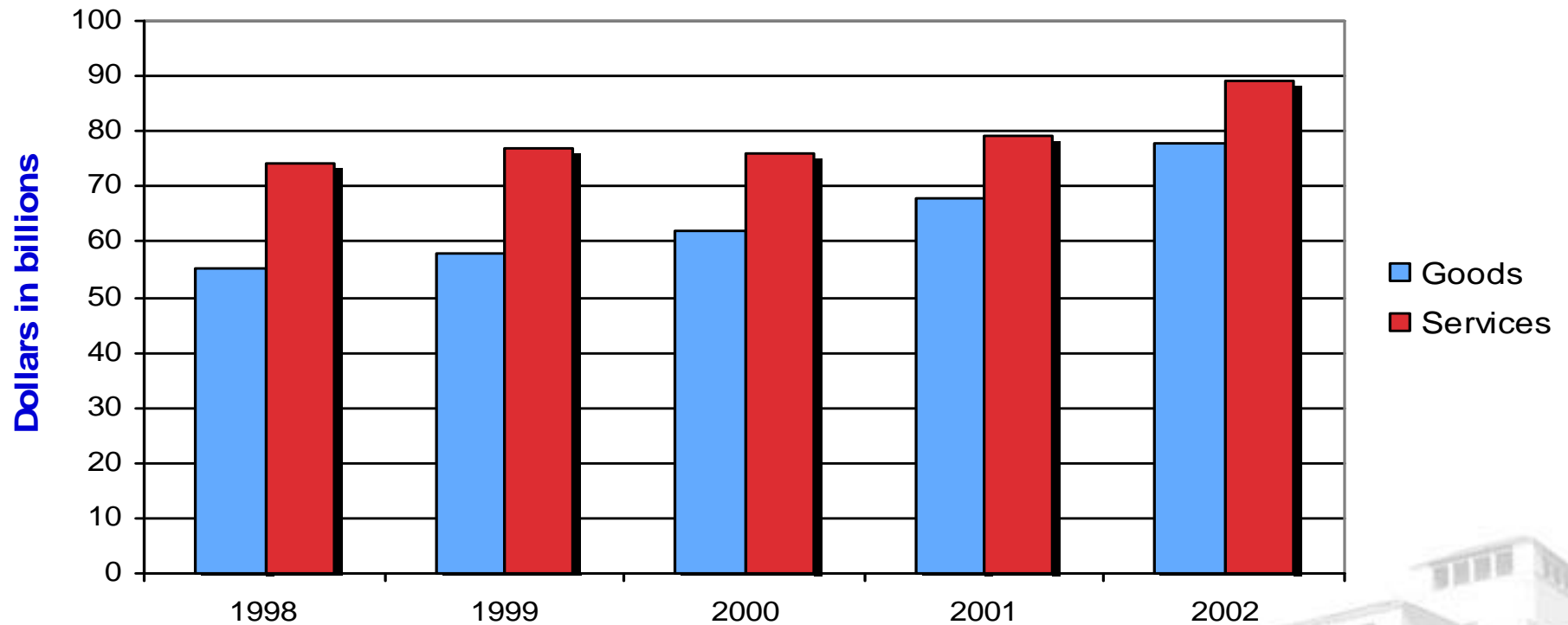


**DoD Spending on Services**  
(Source: GAO-05-274, March 2005, pg. 5)





# The Services Acquisition Environment

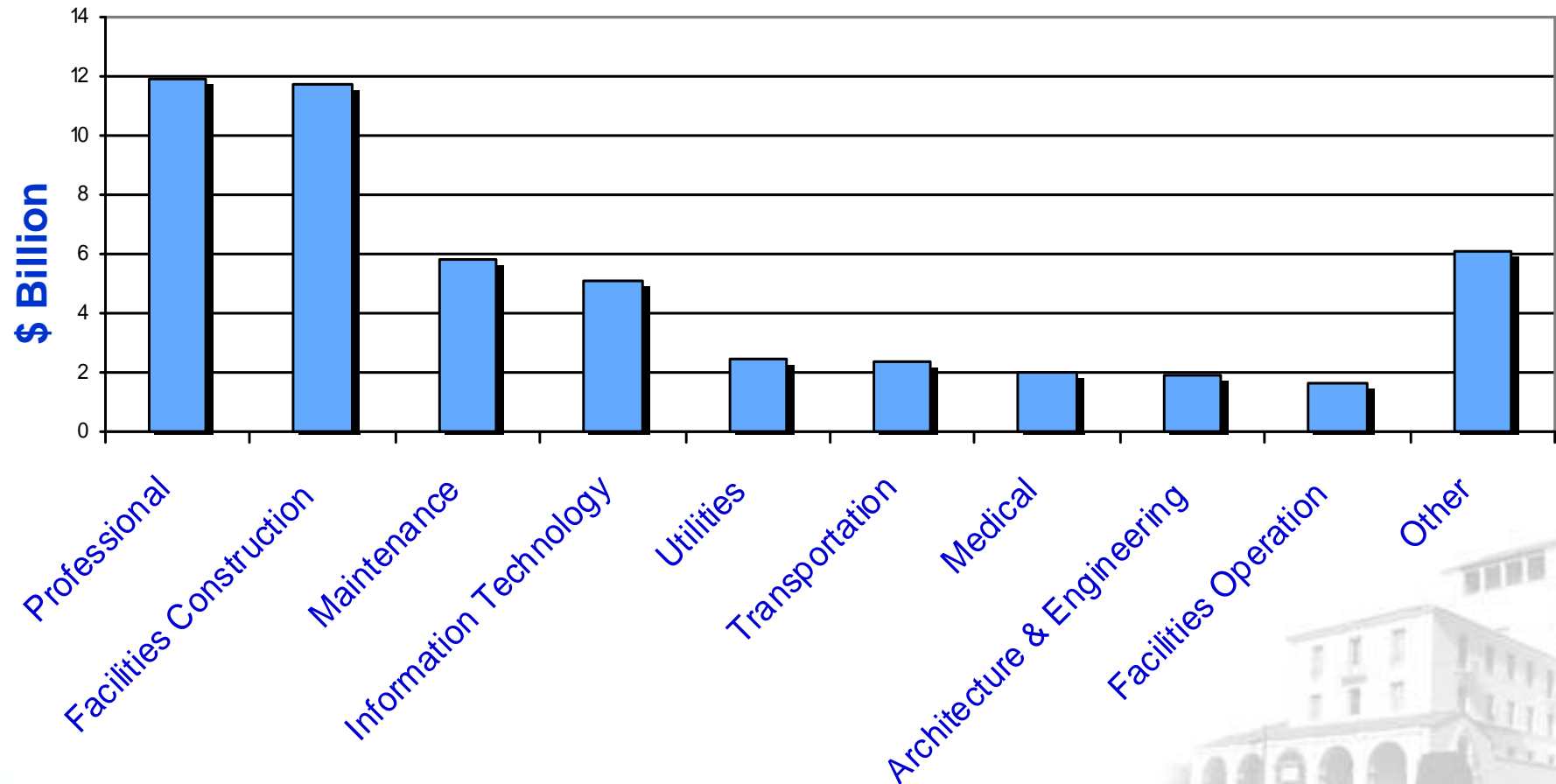


**Figure 3: DoD's Contracts for Goods and Services**  
(Source: GAO 03-935, September 2003, pg. 4)



# The Services Acquisition Environment

Services Purchased by the DoD in FY 2000



# Services Characteristics

- Intangibility
- Co-production
- Measurement Difficulty (input, output, quality, etc.)
- Simultaneity of production and consumption
- Diversity



# Conclusions of FY2006 Research SSC in DoD: Opportunities & Challenges

- Continued growth in the volume of service acquisition in the Department of Defense
- It is difficult to establish service specifications and measure and monitor service output and quality. Hence, having on board the right number of skilled acquisition personnel is highly critical.



# Conclusions of FY2006 Research SSC in DoD: Opportunities & Challenges

- Infrastructure for acquisition of services is less developed and less established compared to that of weapon systems acquisition
- Less formal approach to the acquisition and management of services
- Lack of standardization of business practices in services acquisition



# Conclusions of FY2007 Research SSC in DoD: Program Mgmt Approach

- Program management approach is traditionally used to manage systems acquisition
  - Well-defined, disciplined methodology and infrastructure
  - Centralized, coordinated management
    - Project lifecycle
    - Integrated processes
    - Designated manager with project authority
    - Integrated cross-functional teams
    - Enabling organizational structure
- However, program management approach is typically not used in managing services acquisition



# Conclusions of FY2007 Research SSC in DoD: Program Mgmt Approach

- Program management approach is needed to manage DoD's critical services acquisition
- Air Education and Training Command (AETC)
  - AETC Program Management Flight
  - AETC Contracting Squadron
- Air Combat Command (ACC)
  - Acquisition Management and Integration Center
    - Centralized Planning, Control, and Execution
  - “Services SPO”
    - Combined program management and contracting organization



# Goals of FY 2008 Research: An Empirical Study of Current Mgmt Practices

1. What types of services are typically procured at military installations?
2. What type of acquisition strategy, procurement method, and contracts are used in services acquisition?
3. How is the service acquisition process managed? What management concepts—such as a lifecycle, a program management or a project management approach—are used?





# Goals of FY 2008 Research: An Empirical Study of Current Mgmt Practices

4. What type of organization/management structure is used to manage the services acquisition
5. What training is given to contract and project/program management staff?
6. Are there any significant differences between the way services are acquired and managed in different DoD departments?



# Survey Instrument

Service Category	Product/Service Classification (PSC) Code
Professional, administrative, and management support	R
Maintenance and repair of equipment	J
Data processing and telecommunications	D
Medical	Q
Utilities and housekeeping	S
Transportation and travel	V
Maintenance and repair of real property	Z



# Survey Core Questions

- Contract Characteristics
- Acquisition Management Methods
- Project-team Approach
- Service Acquisition Leadership



# FY 2008 Research Focus

- Lifecycle Approach
- Length of Service
- Level of Staffing, Training and Qualifications
- Market Research Techniques

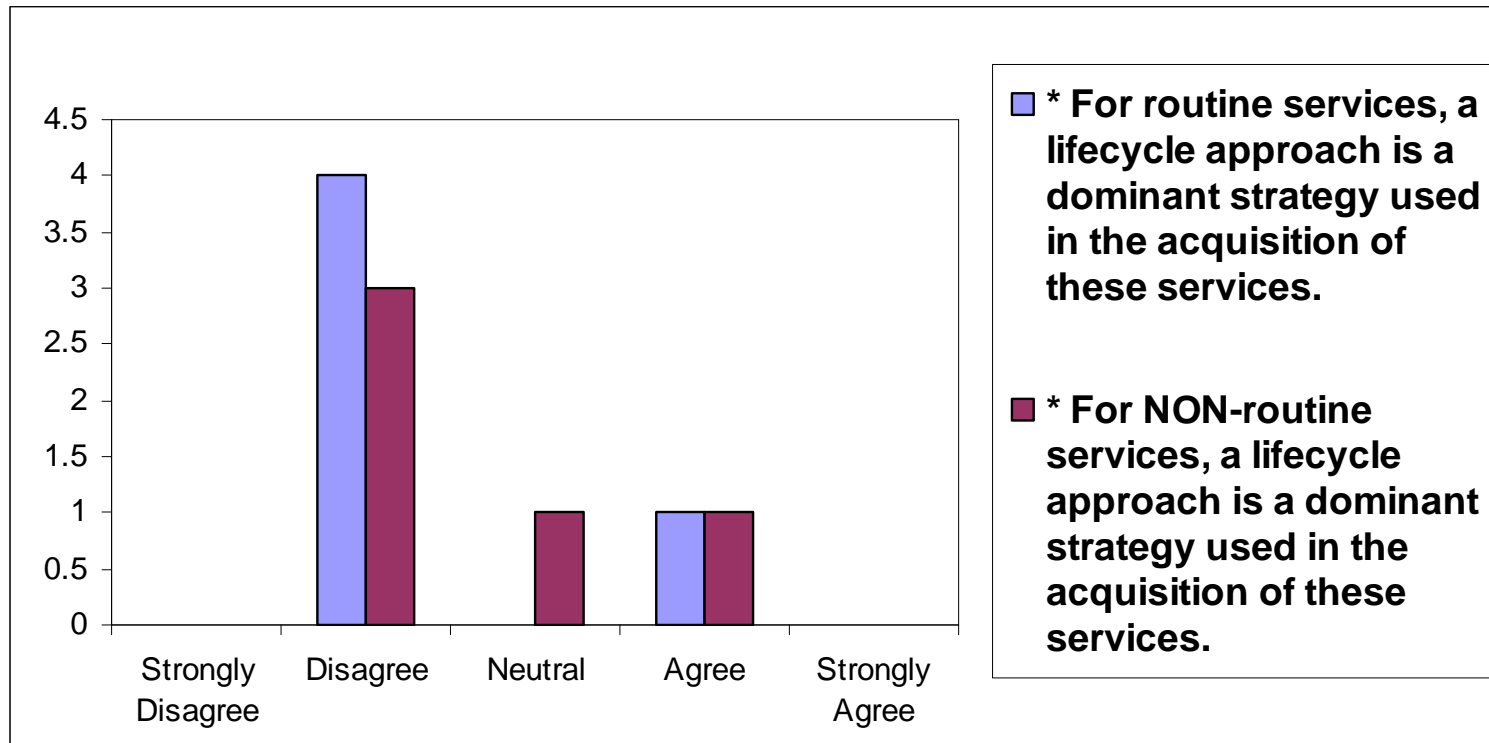


# Contract Characteristics

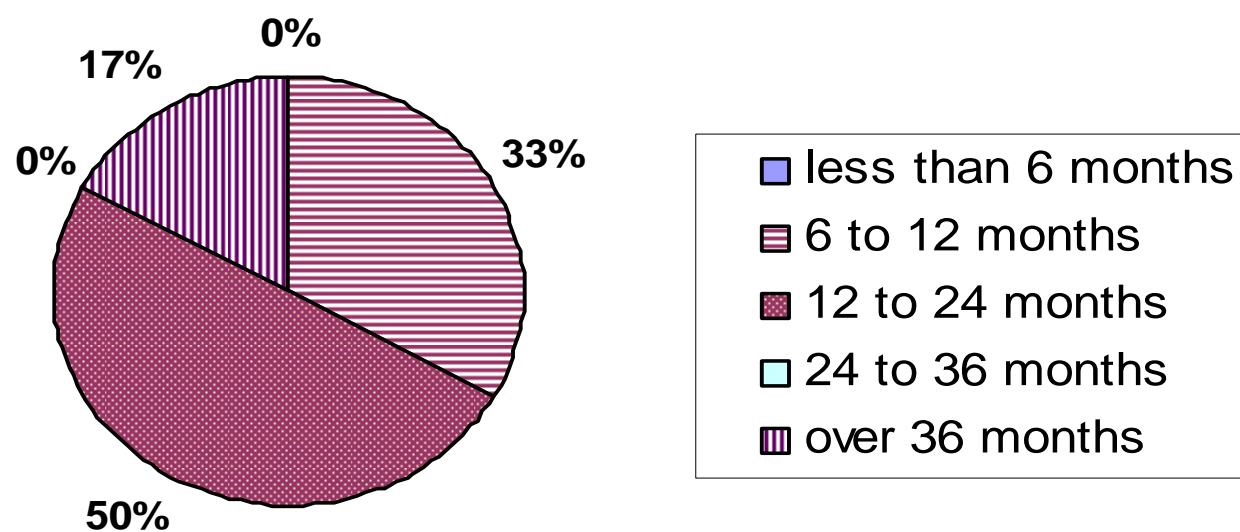
- 88% Competition
- 12% Sole Source
- 70% Fixed Price Contracts
- 30% Cost Type Contracts
- 1 Instance of use of Award Fee in  
Maintenance and Repair of Equipment



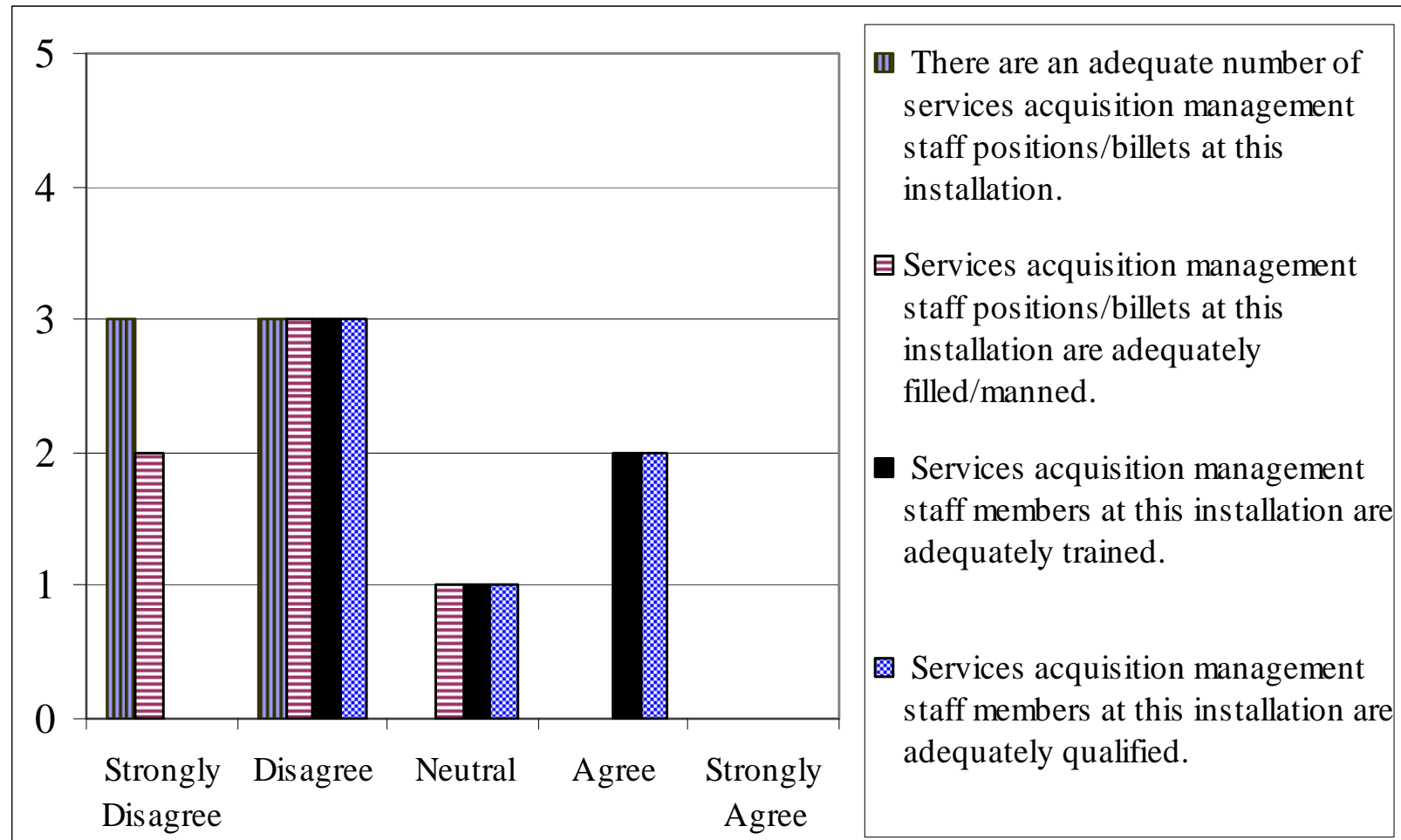
# Lifecycle Approach



# Length of Service

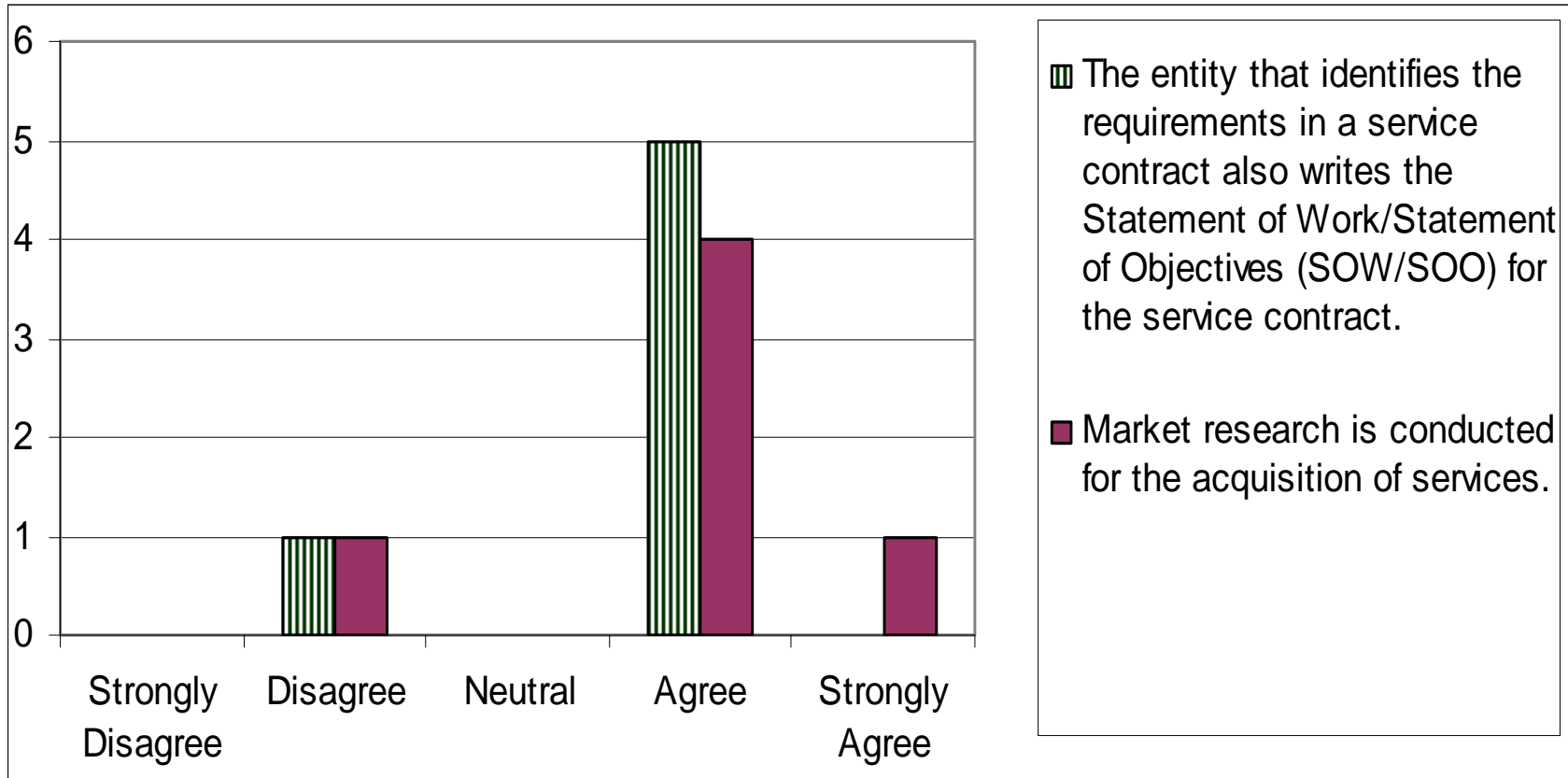


# Levels of Staffing, Training, and Qualifications





# Requirements Management & Market Research



# Preliminary Observations

- Current state of services acquisition management at the installation level suffers from several deficiencies
  - Deficit billets and manning levels
  - Insufficient training
  - Inexperienced acquisition personnel
  - Lack of project team leadership
  - Lack of lifecycle approaches
- Each of these contributes to ineffective and inefficient management of services acquisition



# FY 2008 Research: Current Status

- Preparing to administer survey to Navy and Air Force organizations
- Estimated target date for completed surveys is 15 June
- Survey results to be analyzed by August 30
- Report to be completed by September 30

